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AUTHOR Roberts, Gina; And Others
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ABSTRACT

Students and faculty at Middle Tennessee State University (MTSU) are exploring new ways of teaching and learning in master classrooms. Master classrooms are specially equipped classrooms that contain a wide range of computer, media, projection, communication, and control capabilities, including connection to the campus network. Master classrooms typically contain one computer, which can be used by instructors and students for presentation development, simulations, on-line access, and multimedia. This paper contains information on the development and implementation of master classrooms. Topics include: planning for rooms; renovating and developing rooms; purchasing equipment; utilizing the rooms; campus network and Internet connections; training and supporting faculty; maintaining and upgrading equipment and software; conducting evaluations and implementing suggestions; problems with scheduling, maintenance, staffing, and too few master classrooms; and planning for the future, including "portable" master classrooms and new master classroom construction at MTSU. (Author/SWC)

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Master Classrooms at Middle Tennessee State University: Creating Pathways for Learning

Gina Roberts
Instructional Technology Specialist
groberts@mtsu.edu

Sylvia Brace
Manager, Instructional Technologies and Microcomputer Applications
sbrace@mtsu.edu

Donna White
Technical Writer
dwhite@mtsu.edu

Office of Information Technology
Middle Tennessee State University
1301 E. Main Street
Murfreesboro, TN 37132

Students and faculty at MTSU are exploring new ways of teaching and learning in master classrooms. Master classrooms are specially equipped classrooms that contain a wide range of computer, media, projection, communication, and control capabilities; including connection to the campus network. Master classrooms typically contain one computer which can be used by instructors and students for presentations, simulations, on-line access and multimedia.

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Master Classrooms at Middle Tennessee State University: Creating Pathways for Learning

Students and faculty at Middle Tennessee State University are exploring new ways of teaching and learning. Specially equipped classrooms, called "master classrooms" combine powerful computing, effective display, and the wealth of information available through networks to provide a more flexible and exciting learning environment that accommodates different teaching and learning styles. Studies show that students tend to retain more as well as learn faster if they see, hear, and interact during the learning process. Master classrooms help provide these pathways for learning.

What is a Master Classroom

Kathryn Conway from the University of North Carolina at Chapel Hill defines a master classroom as a specially-equipped classroom that provides a wide range of computer, media, projection, communication, and control capabilities, including connection to the campus network. The master classroom differs from a computer classroom in that it usually does not have individual computers for each student, but rather has a single computer that can be used by an instructor or students for presentations, simulations, on-line access, and multimedia.

Master Classroom Advantages

The most obvious advantage to using a master classroom is the availability of computer, media, and communication technologies. These technologies enable instructors to enhance their different teaching styles as well as to reach students with different learning styles. In a master classroom the equipment is permanently installed and is operated in a consistent manner from classroom to classroom.

Master Classrooms at MTSU

MTSU's Office of Information Technology (OIT) initiated the master classroom project on campus and directed its implementation and development. Planning of the first six master classrooms at MTSU proceeded with support from both administration and faculty. Funds were allocated for equipment, software, and room preparation, as well as for faculty training and grants. Master classroom committees were formed in each college of the University to work with OIT to identify the equipment and software that would best meet the college's needs, as well as to choose the location of the master classroom for that college.

Additional master classrooms continue to de developed with individual departments contributing to their design and funding. As of

January 1996, MTSU has eight master classrooms located throughout the campus with room capacities ranging from 30 - 110. The average cost of the equipment and room renovations has been $30,000-$35,000 per master classroom. OIT continues to administer and support the master classrooms and provides training for faculty, technical support, and maintenance.

Room Renovation and Development

Designing the master classrooms requires consideration of elements such as heating, cooling, power supply, lighting, acoustics, security, networking, furniture, fixtures, and equipment. The following alterations and enhancements are made to prepare classrooms to become MTSU master classrooms:

- dimmable lighting is added with controls near the instructor's station and door;
- chalkboards are replaced with whiteboards;
- power outlets are added;
- a projection panel or motorized projection screen is mounted on the front wall;
- walls are repaired and painted, floors are carpeted; and
- special furnishings are installed such as an instructor's station and equipment cabinet.

Master Classroom Equipment

MTSU's master classrooms contain a wide variety of audio/visual media for use by faculty and students. The typical room consists of the following basic equipment:

- A teacher's station in the front of the room that houses a multimedia PC or Power Macintosh. These computers are loaded with productivity, authoring, presentation and communications software and have access to the campus network and the Internet.
- A visual presenter is mounted on the desktop of the teacher's station. It is used to view documents, 3-dimensional objects, transparencies and slides.
- An equipment cabinet holds a laser disc player, videocassette recorder, and audio receiver.
- Signals from the visual sources are projected on a screen at the front of the room via a multiscan video/data projector.
- Television monitors and speakers are also mounted at the front of the room.
- Each of these components, along with the lighting system, are controlled by the faculty member through a single remote control.

In addition to this basic equipment, each room is customized to fit an individual department's needs.

Master Classroom Uses

The uses of a master classroom are limited only by the faculty's creativity. Faculty may use commercially developed instructional materials in the form of videotapes, laserdics, 35mm slides, computer diskettes, CD-ROMs, audio CDs, and audio cassettes. They can also develop materials themselves.

Many classroom applications can be derived from word processing, spreadsheet, statistical, database, presentation, and authoring software. An English professor may use a word processing package to demonstrate sentence structure, or an accounting professor may use spreadsheet software to show students how to calculate annuities. Presentation software can be used to organize and present lecture notes, which can easily be enhanced with templates, clip art, and symbols. A biology professor may use multimedia authoring software to create an application incorporating animation, still photos, and movies to demonstrate the stages of mitosis. Utilization of these programs enables faculty to spend class time facing the students rather than the chalkboard. It can also increase the lecture's organization and legibility.

Master Classrooms and Network Connections

Having access to MTSU's campus network and the Internet allows faculty to connect to a wealth of content-related information and to demonstrate networks for students. Within the campus network, faculty can demonstrate how to use e-mail, search for information in the campus library, or retrieve files from other computers on campus. They can demonstrate how to use network tools such as Telnet, FTP, Gopher, and the World Wide Web.

The instructional possibilities of the Internet are endless. Examples include an aerospace professor displaying for a weather class satellite images of the earth's atmosphere photographed only an hour or so before class; a political science instructor accessing the President's latest press conference; and a business law class analyzing and discussing up-to-date Supreme Court rulings pulled from the Internet.

Training and Support

Orientations are held every semester to introduce interested faculty members to the capabilities of the master classrooms. One-on-one sessions are recommended for faculty that are teaching in the rooms. During these one-on-one sessions, faculty are given the chance to operate the equipment and ask questions related to their particular needs in the master classroom.

After the semester begins support staff are available if faculty have a problem during a class or have questions about the capabilities of the room.

OIT also provides instructional technologies development grants, productivity, presentation, authoring, and communications software workshops; and application development assistance to make sure MTSU faculty have the necessary time, training, and support to learn to use software, develop applications, and use technology effectively in the master classrooms.

Maintenance and Upgrades

Weekly testing of all master classroom equipment insures its proper operation. Software and hardware are upgraded on an ongoing basis as new ways of doing things are discovered and new equipment is purchased. Faculty suggestions play a significant part in determining what upgrades are needed.

Evaluations

Giving faculty and students the opportunity to evaluate the master classrooms every semester enables them to let us know what works well for them and what doesn't. They also provide OIT with suggestions for improvements. The results are compiled and taken into consideration for training, maintenance, and upgrading of current master classrooms. And, suggestions are kept on file as reference material for the construction of new master classrooms.

As of Spring 1996, over 200 different faculty members have taught in master classrooms. The response has been overwhelmingly positive. 95% of the faculty that respond to evaluations want to teach in master classrooms again and would like to see more master classrooms constructed on campus. They provide OIT with excellent suggestions for classroom improvements and upgrades. Many of these have already been implemented.

Since the inception of master classrooms in Fall 1994, well over 500 students per semester have taken classes in them. Almost 85% of the students surveyed would like to take more classes in them and see more constructed on campus. They site the Internet access in the rooms and the increased visual presentation of course content as two of the main factors.

Master Classroom Challenges

As departments allocate funding for their own individual master classrooms, scheduling and maintenance difficulties increase. Currently there are master classrooms that are reserved for use only by specific departments and master classrooms that are open to all departments when space if

available. Whether a master classroom is for university wide use or department specific use, OIT provides as much support as the faculty need.

As the numbers of master classrooms increase, OIT will also face the challenge of not having enough personnel to support them. This problem may be addressed by hiring additional personnel or student workers to assist with master classroom support.

The most difficult challenge OIT faces is not having enough master classrooms on campus. As faculty members start teaching in the rooms and developing materials that in many cases can only be used in master classrooms, they want to be able to teach all their courses in master classrooms. Of course, this is not possible at this time. OIT's only course of action is to encourage individual departments and colleges to continue to develop master classrooms and to seek grant funding for the construction of campus wide master classrooms.

The Future of Master Classrooms

During the fall 1996 semester, OIT will assist a department with the implementation the first multimedia carts on campus. Three systems have been purchased that contain LCD projectors, Macintosh PowerBooks, visual presenters, VCRs, and CD-ROM players. This is a workable solution in rooms that are not large enough to be converted to master classrooms. Master classroom faculty and other faculty that are using teaching materials developed by master classroom faculty can use technology-based teaching materials with these "portable master classrooms".

In addition, two new master classrooms will be constructed over the summer bringing the total to ten classrooms on MTSU's campus. Master classrooms will be constructed in MTSU's new Business/Aerospace building and library building as well.

Perhaps in the future there won't be a need for the term "master classroom" on the MTSU campus because the standard classroom will be a master classroom. Until this happens, OIT's goal is to constantly improve and upgrade not only the hardware and software in the master classrooms, but also the ability of our faculty members to effectively use instructional technologies in their teaching and share this ability with their students.